

**WHAT IS CLAIMED IS:**

1. A design tool for assembling component objects to form an object-based computer system application, said design tool comprising:

5 a declarative user input interface mechanism configured to be operable to provide an input structure for inputting user declarations specifying operative interactions between component objects; and

10 a design engine configured to be operable automatically to generate, in response to input user declarations, an application design definition modelling an application infrastructure for managing component object interactions.

15 2. A tool according to Claim 1, wherein said design engine is configured to be operable automatically to generate, in response to input user declarations, at least one application view definition for managing component object interactions, and to cause said application design definition to reference said at least one application view definition.

20 3. A tool according to Claim 1, wherein an application view definition comprises one or more fields, said design engine being configured automatically to generate, in response to input user declarations, at least one application view field definition for detailing a field of said at least one application view definition.

25 4. A tool according to Claim 1, wherein said design engine is configured automatically to generate, in response to user input declarations, at least one operation usage definition to specify an effect a component object operation has on one or more of said application view definitions.

30 5. A tool according to Claim 4, wherein said design engine is configured automatically to generate, in response to input user declarations, an event definition of an operation usage triggered by an application view definition event.

6. A tool according to Claim 4, wherein said design engine is configured automatically to generate, in response to input user declarations, a match between said application view field definition and a parameter of an associated component object operation.
- 5 7. A runtime tool comprising an application engine responsive to an application design definition modelling an application infrastructure for managing component object interactions, wherein said application engine is configured to be operable at runtime automatically to create application view instances from respective application view definitions for managing runtime component object interactions for said application.
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- 15 8. A tool according to Claim 7, wherein said application engine is configured to be operable at runtime to provide automated management of data values provided to operations, and data values provided by operations when said operations are invoked by an application view instance.
- 20 9. A tool according to Claim 8, wherein said application engine is configured to reference said application view definitions to provide one or more of the following functions:
- 25 (a) automatically to create application views when requested;  
(b) automatically to map input parameter values to an operation, for a given operation usage, from one or more application views when a user requests an operation usage to be triggered;  
(c) automatically to map output parameter values from an operation to one or more application views for an operation usage, when said operation usage has been completed;  
(d) to manage effects of operation usages on application views and trigger any associated application view events;  
30 (e) to manage effects of application view events on application views and trigger any associated operations;  
(f) to determine what operation usage(s) can be run on the basis of input parameter satisfaction.

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10. A user interface configuration tool for automatically configuring a user interface based on an application design definition modelling an application infrastructure for managing component object interactions, said tool being configured to be operable to cause an application engine to interact with said application design definition for creating application view instances from  
5 respective application view definitions and for managing application data, said tool also being configured to be operable to display values held in said application view instances and to permit operations to be invoked.

11. A method of assembling component objects to form an object-based computer system  
10 application in a computer system, said method comprising:

- i) generating a declarative user input interface mechanism providing an input structure for inputting user declarations specifying operative interactions between component objects; and
- 15 ii) automatically generating, in response to input user declarations, an application design definition modelling an application infrastructure for managing component object interactions.

20. 12. A method according to Claim 11, wherein step (ii) comprises:

automatically generating, in response to input user declarations, at least one application view definition for managing component object interactions, and causing said application design definition to reference said at least one application view definition.

25. 13. A method according to Claim 11, wherein an application view definition comprises one or more fields and step (ii) additionally comprises:

30 automatically generating, in response to input user declarations, at least one application field definition for detailing a field of said at least one application view definition.

14. A method according to Claim 11, wherein step (ii) additionally comprises:

automatically generating, in response to input user declarations, at least one operation usage definition of an effect a component object operation has on one or more of said application view definitions according to said user input declarations.

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15. A method according to Claim 11, wherein step (ii) additionally comprises:

automatically generating, in response to input user declarations, an event definition of an 10 operation usage triggered by an application view definition event.

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16. A method according to Claim 15, wherein step (ii) additionally comprises:

automatically generating, in response to input user declarations, a match between said 20 application field definition to a parameter of an associated component object operation.

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17. A method of automated management of object interactions in a computer system, comprising:

responding at runtime to an application design definition, which models an application infrastructure for managing component object interactions, automatically to create application view instances from respective application view definitions for managing runtime component object interactions for said application.

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18. A method according to Claim 17, wherein said method comprises:

at runtime, providing automated management of data values provided to operations, and data values provided by operations when said operations are invoked by an application view instance.

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19. A method according to Claim 18, including one or more of the following steps:

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- (a) automatically creating application views when requested;
  - (b) automatically mapping input parameter values to an operation, for a given operation usage, from one or more application views when a user requests an operation usage to be triggered;
  - (c) automatically mapping output parameter values from an operation to one or more application views for an operation usage, when said operation usage has been completed;
  - (d) managing effects of operation usages on application views and trigger any associated application view events;
  - 10 (e) managing effects of application view events on application views and trigger any associated operations;
  - (f) determining what operation usage(s) can be run on the basis of input parameter satisfaction.

15 20. A method of automatically configuring a user interface based on an application design definition modelling an application infrastructure for managing component object interactions, said method comprising:

20 causing an application engine to create application view instances from respective application view definitions of said application design definition;  
displaying values held in said application view instances; and  
permitting operations to be invoked.

25 21. A design tool program on a data storage medium, said design tool program being for assembling component objects to form an object-based computer system application and comprising:

30 a declarative user input interface mechanism configured to be operable to provide an input structure for inputting user declarations specifying operative interactions between component objects; and

a design engine configured to be operable automatically to generate, in response to input user declarations, an application design definition modelling an application infrastructure for managing component object interactions.

5        22. A runtime tool program on a data storage medium, said runtime tool program comprising an application engine responsive to an application design definition modelling an application infrastructure for managing component object interactions, wherein said application engine is configured to be operable at runtime automatically to create application view instances from respective application view definitions for managing runtime component object interactions for said

10 application.

15        23. An object-based computer system comprising a design tool program, said design tool program being for assembling component objects to form an object-based computer system application and comprising:

20              a declarative user input interface mechanism configured to be operable to provide an input structure for inputting user declarations specifying operative interactions between component objects; and

25              a design engine configured to be operable automatically to generate, in response to input user declarations, an application design definition modelling an application infrastructure for managing component object interactions.

30        24. An object-based computer system comprising:

25              an object-based computer system application;

30              an application design definition modelling an application infrastructure for managing component object interactions, said application design definition having been generated by a design engine in response to input user declarations; and

35              an application engine responsive to said application design definition and operable at runtime automatically to create application view instances from respective application view definitions for managing runtime component object interactions for said application.